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**WAVELENGTH CONVERTER AND WAVELENGTH DIVISION MULTIPLEXING  
TRANSMISSION METHOD USING SAME**

**ABSTRACT OF THE DISCLOSURE**

A wavelength converter using difference frequency generation (DFG) is disclosed. In one embodiment, the wavelength converter comprises (a) a first optical filter configured to filter out one or more lightwaves requiring wavelength conversion from wavelength-division multiplexed (WDM) lightwaves, and (b) a broadband multi-channel simultaneous wavelength conversion portion comprising a pump source that generates pump light for use in the process of the DFG, a first optical combiner for combining said pump light with said filtered lightwaves, a high non-linear medium configured to generate wavelength converted lightwaves from said filtered lightwaves using the DFG, and a second optical filter for filtering said wavelength converted from said filtered lightwaves

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